

APPLICATION OF EXPERIENTIAL KNOWLEDGE AND PERSONAL CONSTRUCTS INTO CONSTRUCTION CLAIMS MANAGEMENT

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ABSTRACT

Construction industry is known as a knowledge-intensive, where much of construction knowledge is tacit in nature based on experience. Nevertheless, sharing and applying of Experiential Knowledge (EK) and Personal Constructs (PC) to managing construction projects is lacking. Construction projects will inevitably involve claims, where due to presence of knowledge deficits of professionals in the industry, Claims Management (CM) has become a challenging task for contractors. Thus, the research aimed to explore the applicability of integrated EK and PC approach within the organisational culture towards successful CM practice. A qualitative approach inclusive semi-structured detailed expert interviews was attained in pursuing the research aim as the data collection tool. Data collection was limited to Grade C1 and above contractors in Sri Lanka. Literature findings disclosed the significance of applying previous project experience, role of organisational culture and role of PC in the construction industry. Expert interviewees established that CM is a knowledge-intensive core practice in the construction sector. Accordingly, the research study developed a framework indicating the relationships and applicability of Experiential Learning (EL), PC, Knowledge Sharing (KS) and Shared Learning concepts along with reusable project knowledge and EK towards each phase of CM process within the knowledge centred organisational culture.

Keywords: *Claims Management; Experiential Knowledge; Experiential Learning; Personal Constructs; Shared Learning.*

1. INTRODUCTION

Knowledge is the “lifeblood of an organisation” (Asrar-ul-Haq et al., 2016) and is generated by transforming experience (Battistutti & Bork, 2017). Knowledge of individuals gained from experience has a connection with various applications in the construction industry (Johansson, 2012; Liu et al., 2019). Therefore, management of knowledge is crucial (Asrar-ul-Haq et al., 2016) to overcome the challenges in construction projects (Safaei et al., 2020). The knowledge that is gained in a project needs to be transferred to an organisation's memory for reuse on other projects (Owen et al.,

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2014; Zhou et al., 2022). Hence, sharing experience and information among the people in the project team is an important task to improve the work performance compared to the past (Terzieva & Morabito, 2016). According to Alroomi and Jeong (2012) and Love et al. (2018), developing a learning culture can improve the project outcomes in the construction industry. Experiential Learning (EL) is based on the notion that the best way to learn something is by doing it. Western Governors University (2020) stated that EL is the dominant learning style in the construction industry. Yap and Shavarebi (2019) explained that EL and project personnel's personal constructs (PC) will be an important part of reusable project knowledge. Xiao and Boyd (2006) argued that the PC of the project management team must be challenged to increase their ability to learn to handle difficulties.

Due to the exclusive, vibrant and diverse nature in the construction industry, there have been situations where claims are inevitable (Apte & Pathak, 2016; Seo et al., 2021). Disputes arise when the contractor claims are not effectively managed (Khekale & Futane, 2015; Mehany et al., 2018). To address this challenge, claims management (CM) process is required and established by the industry contractors (Shaikh et al., 2020). CM is the process of employing and coordinating resources to progress a claim from identification and analysis through preparation, and presentation, before it proceeds to negotiation and settlement (Kululunga, 2001). However, construction CM is not a simple task and raises a variety of challenges for contractors like reaching amicable settlements (Lew et al., 2014; Parchami et al., 2020). Safaei et al. (2020) claims that there is a significant relationship between CM and knowledge management as a response to the aforementioned challenge. In fact, the knowledge deficit of professionals relating to managing claims constitutes a threat to the effective management of claims (Bakhary et al., 2015).

Numerous studies have been conducted on KS (Sanboskani et al., 2020; Senaratne et al., 2021), EL (Yap & Shavarebi, 2019), and PC (Simić et al., 2017; Vukelić et al., 2021) for the construction industry. However, there is a gap in integration of the above three concepts that relate to the application of CM practices in the Sri Lankan construction industry. Existing challenges in knowledge management that affect the successful CM practices can be fixed by the integration of EK and PC of the project team members with a proper collaborative organisation culture in contractor companies. Therefore, this research attempts to address the effective CM practice with the application of integrated EK and PC concepts within a collaborative learning culture. The structure of the paper consists of a critical evaluation of literature findings on the concepts of EK, PC, Shared Learning and CM, a study of research methodology and key findings from expert interviews on how integrated EK and PC concepts apply to the CM process.

2. LITERATURE REVIEW

2.1 PERSONAL CONSTRUCTS

Personal constructs (PC) are mental representations used to interpret events (Eiroa-rosa et al., 2019). The personal construct theory (PCT) developed by George Kelly, examines people's personalities, and explains their behaviour (Xiao & Boyd, 2006). Kelly's PCT concerns that everyone develops a unique perspective on their living environment (Xiao & Boyd, 2006). PC serves as mental frameworks to interpret new difficult circumstances (Xiao & Boyd, 2006) because PC are methods by which individuals gather information,

access them, and create interpretations. Love et al. (2018) emphasise that the aforementioned theory helps to understand the environment, solve issues, and utilise the memory of the people effectively.

2.2 APPLICATION OF EXPERIENTIAL LEARNING AND EXPERIENTIAL KNOWLEDGE IN THE CONSTRUCTION PROJECTS

Experience is an important role in decision-making and learning (Yap & Shavarebi, 2019). Ability to learn and acquire knowledge through experience is a key to personal development (Eraut, 2011). “The process of learning through experience” (Felicia, 2011, p. 1003) is called Experiential Learning (EL) which is significant in developing the competencies of professionals. Koskinen (2012) stated that learning from past project experiences improves project management skills in project-based organisations (Kokkonen & Alin, 2015). Moreover, Blume (2017) defined Experiential Knowledge (EK) as the knowledge gained through EL. Yap and Shavarebi (2019) highlight that learning from individual’s and others’ mistakes and viewing these failures as opportunities for improvement is a part of the learning process. Therefore, the application of EK to construction practices prevents repetitive mistakes, minimises rework, and omits reinventing the wheel (Yap & Shavarebi, 2019).

2.3 ROLE OF SHARED LEARNING (SL) CONCEPT IN THE CONSTRUCTION INDUSTRY

Shared Learning (SL) is the process of cooperating to accomplish a common goal (Sustainable Energy Advice Ltd., 2012). Information and knowledge gained through professional experience, training, business knowledge etc. (Lin & Lee, 2004) can be shared among the project teams in an organisation (Nguyen & Malik, 2020) allows organisation-wide learning (Ganguly et al., 2019), especially in the construction industry (Fong & Chu, 2006). Sharing knowledge among teams is important because SL enables KT across different projects that helps in acquiring knowledge for future projects (Ma et al., 2008; Nguyen & Malik, 2020) and for knowledge creation (Nguyen & Malik, 2020; Owen et al., 2014). Formal shared learning methods are project report database, assigning same employee to different projects, and flagship projects (Mueller, 2015). Working in a KS environment helps employees to enhance their creativity (Malik et al., 2020; Wang & Noe, 2010), problem-solving and productivity (Hung et al, 2021).

2.4 REUSABLE PROJECT KNOWLEDGE

An effective strategy that fits project’s needs is to adapt or adopt reusable project knowledge (Tan et al., 2010). This strategy can save cost and time by eliminating the reinvention of the same specific knowledge (Baxter et al., 2008). Tan et al. (2007) shows that tacit and explicit knowledge are frequently combined to provide reusable project knowledge which allows for the maximisation of group learning, prevention of knowledge loss and utilisation of the value of the gathered knowledge (Kamara et al., 2003). Knowledge reuse enables better decision-making and creative problem-solving in situations with incomplete and restricted information (Yap & Shavarebi, 2019) via communication and networking.

2.5 KNOWLEDGE CENTRED ORGANISATIONAL CULTURE IN CONTRACTOR ORGANISATIONS

Organisational culture is the beliefs, values, and presumption of an organisation (Heinz, 2022). Organisational culture impacts the decision-making, communication, and working relationships (Naoum et al., 2015; Paais & Pattiruhu, 2019). Job satisfaction and productivity can be increased by fostering knowledge-related activities such as cooperation and learning (Durmusoglu, 2014). Collaborative organisation culture influences the Knowledge Sharing (KS) behaviour among professionals in the construction project team (Nugroho, 2018). Zhang and Li (2016) stressed the significance of collaborative organisational culture in knowledge reuse applications while intra-organisational and inter-organisational communication for better CM processes (Seo et al., 2021). Therefore, organisational culture plays a significant role in informal and formal KS processes among the professionals in the organisation (Papoutsakis, 2009). Yepes & López (2021) reveals that knowledge-centred culture acts as a key influential factor in the knowledge transfer process. The beliefs, attitudes, and behaviours of the organisation's members act as a means of shaping learning culture so that it becomes personal learning (Fernandes, 2018; Rohim & Budhiasa, 2019).

2.6 ROLE OF KNOWLEDGE IN CLAIMS MANAGEMENT

CM is the process of employing and coordinating resources to progress a claim from identification to negotiation (Kululanga, 2001). Accordingly, contractor's CM process has six phases. Identification comes first, then notification, examination, documentation, presentation, and claim negotiation (Parikh et al., 2019). An efficient CM system is needed due to the rising number of construction claims in diverse and complex construction projects (Seo & Kang, 2021). Improper management of claims leads to disputes such as disagreements over the validity and value of the claim (Mehany et al., 2018). Chovichien and Tochaiwat (2006) and Oyegoke (2006) reveals that the deficit in CM expertise is a threat to effective CM- An effective CM should possess a project team who is skilled and experienced in construction law and practices (Apte & Pathak, 2016). Although identifying and presenting claims is easy, substantiation and negotiation of claims are difficult. The above challenge can be addressed by inferring qualified and experienced practitioners that have skill sets in claim procedure, claim presentation and defence along with the CM team (Bakhary et al., 2015). Also, applying reusable knowledge within a cooperative atmosphere can entail better management of claims (Noorzai et al., 2016; Project Management Institute, 2017).

3. RESEARCH METHODOLOGY

The focus of the research is to examine how EL, EK, SL and PC concepts apply to construction CM practice in order to enhance its success from contractor's standpoint. Qualitative research approach provides opportunities for the researcher to grasp the nature of the matter and develop theories out of practical applications Choy (2014). Since in-depth knowledge and personal opinions of the professionals who are practising CM in the industry are necessary for this research, qualitative approach was adopted to continue the research study. Purposive sampling allows the researcher to collect qualitative responses from the best-fit participants in order to gain a deeper understanding and more precise research findings (Campbell et al., 2020). Subjected to purposive sampling, data was collected from the experts who have more than 10 years of experience in the industry

related to CM process. Semi-structured interview is one of the prominent data collection techniques because of its flexibility to the researcher to ask new questions and drop old ones during the interview (Ragab & Arisha, 2017; Kallio et al., 2016). Hence, semi-structured interview was used for data collection. Manual content analysis technique was adopted for this research as the data analysis technique because the number of interviewees and data were within a manageable number, there was no need to resort to automated content analysis.

Interviews were conducted with fourteen (14) construction industry professionals in engineering and quantity surveying profession. All the professionals interviewed have been exposed to CM during their career life and are chartered qualified professionals with intense Sri Lankan industry experience. The profiles of the interviewees are summarised in Table 1.

Table 1: Profile of interviewees

Code	Designation	Experience	Qualification
PE 01	Director	25 years	Chartered Quantity Surveyor, Adjudicator, Claim Consultant
PE 02	Project Director	25 years	Chartered Engineer
PE 03	Project Engineer	30 years	Chartered Engineer
PE 04	Senior Contract Specialist	25 years	Chartered Quantity Surveyor, Claim Consultant
PE 05	Senior Contract Specialist	25 years	Chartered Quantity Surveyor, Claim Consultant
PE 06	Quantity Surveyor	12 years	Chartered Quantity Surveyor, Claim Consultant
PE 07	Quantity Surveyor	10 years	Chartered Quantity Surveyor
PE 08	Director	30 years	Chartered Quantity Surveyor, Adjudicator
PE 09	Director	28 years	Chartered Quantity Surveyor
PE 10	Project Engineer	27 years	Chartered Engineer, Claim Consultant
PE 11	Former Senior Quantity Surveyor	13 years	Chartered Quantity Surveyor
PE 12	Project Engineer	10 years	Chartered Engineer, Claim Consultant
PE 13	Quantity Surveyor	15 years	Chartered Quantity Surveyor
PE 14	Quantity Surveyor	20 years	Chartered Quantity Surveyor, Claim Consultant

4. DATA ANALYSIS AND RESEARCH FINDINGS

4.1 KNOWLEDGE INTENSIVENESS IN CONSTRUCTION CLAIMS MANAGEMENT

All the respondents affirmed that claims management (CM) involves the application of vast knowledge and competencies of construction professionals. As insisted by the interviewees CM is not just a single one-time task but is a continuous process involving series of sub-activities associated with various knowledge applications. As declared by PE 02 and PE 06, a detailed claim document primarily consists of a scenario, legal and

contractual facts and quantum. With that, in order to compile above three components together, professionals must be proficient in law (legal principles and case laws), contractual provisions, contract administration, project management, economics, finance, statistics, mathematics, software, modern technologies and site works. Determining documents to be maintained and keeping records also knowledge applicable areas in CM process as proclaimed by PE 15. Nevertheless, PE 08 pinpointed the inferiority of the knowledge of Engineers and Quantity Surveyors in analysing and substantiating claims. Hence, PE 12 emphasised “*CM should be assigned to professionals who have sufficient knowledge in managing claims gained through professional experience and formal education*”. Apart from that for CM, variety of professionals are getting involved such as Engineers, Quantity Surveyors, Architects, Lawyers, Financial Experts and others. Therefore, as specified by PE 01 “*it is essential to have an in-depth knowledge and ability to understand different concepts involved with those professions to meet the success of the CM*”. The Interviewees believed that without adequate knowledge background in managing claims, professionals are stuck at a point of managing the process of claims.

According to the responses of the interviewees, CM is a unique and complex task in a construction project. Therefore, making the right judgements throughout the CM process is crucial in achieving success for both parties. The interviewees revealed that other than construction project experience and contractual knowledge, having an understanding of legal principles, economics, law, technology statistics and mathematics is beneficial for professionals who are involving in managing claims. By considering all the points and facts discussed above evident knowledge intensity in CM.

4.2 APPLICATION OF INTEGRATED EXPERIENTIAL KNOWLEDGE (EK) AND PERSONAL CONSTRUCTS (PC) INTO CLAIMS MANAGEMENT (CM)

Literature has shown that professionals earned EK through EL. That is taking lessons from earlier projects that people have worked on. According to PE 01, knowledge gained through engaging in professional work is beneficent for each and every phase of the CM process. As PE 06 couched that project team members shall learn from previous experiences gained via engaging in management of claims in order to capture the relevant contractual provisions and legal matters, and to narrowly quantify the extension of time for completion period and the amount of associated cost going to be claimed, during the claim examination stage. Moreover, PE 11 declared “*intending to substantiate the contractor’s entitlement, maintaining apposite documents at and off-site with accurate data is a core task in CM process*”. Hence, having EK on site-related work will facilitate in determining which documents need to be maintained to prepare the detailed claim and is more advantageous in winning the claim. PE 02 highlighted that, in the local industry, there is no standard format for preparation of a detailed claim document, henceforth devising a claim in a precise and simple format and presenting contractual facts, legal facts and quantification relying on previous CM experience.

Personal constructs (PC) are mental representations used to interpret events. Since PC are unique to the person, people interpret the same event in different forms. PE 01 has opined that application of PC with the integration of Experiential Knowledge (EK) of the project team is essential in the claims preparation and negotiation stage because through sharing their experiences and perspectives, the most advisable delay analysis technique, legal principles and contractual provisions and formulas of computation of associated cost can be adapted with proper justifications for the above selections and claim document can be

presented in the most suitable manner with minimum mistakes. Furthermore, bringing different perspectives of the project team members to one specific point enables interpreting an event in numerous ways, which act as a means of suggesting more alternatives under a wide range of contractual provisions, to address the claim comprehensively.

Nearly all of the respondents' points of view and perspectives evidently established that integration of EK gained via EL and shared PC are applicable for all the phases of the CM process.

4.3 APPLICATION OF REUSABLE PROJECT KNOWLEDGE INTO CLAIMS MANAGEMENT (CM) PROCESS

Over time, professionals working in the construction industry go through multiple stages in their career life. All the interviewees confirmed that previous project knowledge of them is utilised for current CM events. PE 04 stressed *“when there was a failed claim event which was handled in the past, some professionals went through them again, studied and analysed why it failed and then learnt by themselves not to make such mistakes or anything wrong again in prospective cases”*. Further, they always keen to apply the knowledge grasped via that particular failed claims to manage the future claims effectively.

Significance of the application of reusable project knowledge was re-examined in the practical scenario of CM context. According to PE 02, *“having experience on site work enables early or right time identification of claims”*. Further, in the documentation phase of CM process, reusable project knowledge is applied in identifying which documents should be maintained. Detailed claim document is subjective to the organisation due to unavailability of standard format for it. Due to such fact, the format followed to manage the past case can be adapted to the preparation of current claim documents. Experience in negotiating claims in the past enables one to anticipate the opponent party's possible reactions and plan appropriately in advance, ensuring the contractor's right is established throughout the negotiation stage. Moreover, PE 13 specified *“developing defence strategies and making commercial decisions in negotiation stage are done with the assistance of reusable project knowledge”*. Accordingly, application of reusable project knowledge is crucial in managing claims effectively.

The framework developed by Yap and Shavarebi (2019) defined the right decisions made by professionals at the right time using integrated EK and PC of the project team members as “Expert Judgement”. The responses of the interviewees are evident “Expert Judgement” feature in Yap and Shavarebi (2019) framework is adaptable for all the phases of CM process in the construction industry.

4.4 ROLE OF ORGANISATIONAL CULTURE TOWARDS INTEGRATION OF EK AND PC

The contractor's organisation was encouraged to adopt the organisational culture that would best support the integration of project team members' EK and PC as well as a robust KS strategy. The interviewees agreed to implement a collaborative organisational culture for effective integration of EK and PC. PE 14 believed *“collaborative culture allows employees to freely share their knowledge with others”*. According to the respondent's views, it is more appropriate to introduce an organisational culture

developed primarily based on collaborative nature, including components of other organisational cultures such as competitive advantage, goal orientation, structuring and profit-seeking, to meet the success of CM in contractors' organisations.

4.5 DEVELOPMENT OF THE FRAMEWORK

The framework was developed to illustrate how the concepts of EK, and PC are able to be integrated in a knowledge oriented collaborative environment to make the claims management practices more efficacious. The strategy of creation of collaborative model comprised of straining the most pertinent elements and characteristics of EL concept and PC concept.

Respondents assured that learning from project failures is the best practice for improving professional knowledge and transferring best practices to prospective projects. Kolb's Experiential Learning Theory (ELT) has defined experience as the core of learning. Adhering to a procedure which has the ability to integrate and share own constructs with each other, creating the potential of addressing unexpected issues in CM in a satisfaction manner. Previous research done by Yap and Shavarebi (2019) has developed a framework indicating how integrated EL and PC apply in expert judgements making, via application of reusable project knowledge to ameliorate the project delivery performance in the construction industry. That developed framework was also adapted to the model development in order to adduce the relationship between PC, EK and reusable project experience.

As revealed in interviews, CM is a knowledge-intensive application in the construction industry. Almost all phases involve professional knowledge and experience applications. Hence, managing knowledge across the project team members who are participants of CM is crucial towards its success. Literature and interviewees substantiated the significance of continuous learning in CM. Figure 1 demonstrates the developed framework for the analysed findings.

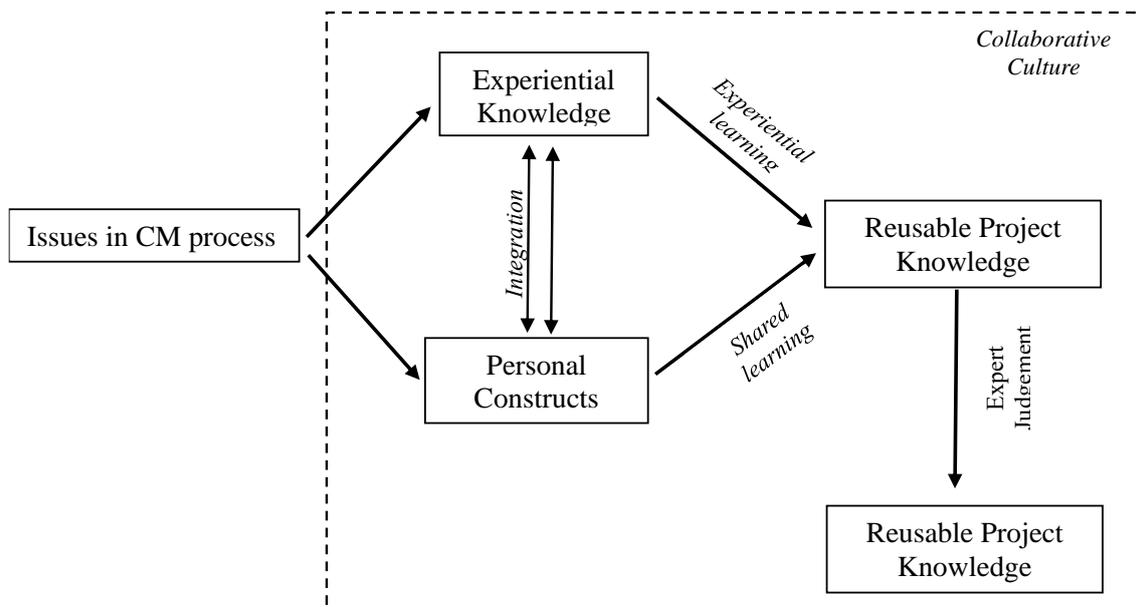


Figure 1: Framework

Use of integrated EK and PC as “Reusable Project Knowledge” within a collaborative environment is vital in making decisions because CM has grown more difficult for practitioners due to a lack of expertise and knowledge. By doing this, it will be possible to solve current CM process issues in an appropriate manner and ensure that the contractor is entitled to the claimed costs and time. The development of a sharing culture also reduces knowledge loss in the construction industry.

As interviewees specified, the framework indicates the interrelationship in between the concepts of EK and PC of the project team members within the knowledge oriented organisational culture. By adhering to this framework, project team members are equipped to make well-informed decisions in response to challenges encountered at each phase of the CM process. Furthermore, the framework facilitates KS among the team mates in contractor organisations, enabling the formation of teams enriched with comprehensive expertise and addressing the knowledge gaps among professionals. This approach ensures that contractors possess the necessary capabilities to meet all requirements and successfully navigate all phases of the CM process. Consequently, it mitigates many of the obstacles faced by CM practitioners, while maximising the contractor's potential to successfully claim costs and time. The process establishes a roadmap for addressing the client's repudiation of contractor claims during claim evaluation and negotiation stages, ultimately minimising the occurrence of disputes and enhancing the overall CM process. Furthermore, the implementation of this framework primarily benefits the parties responsible for managing claims. Initially, this framework is best suited for large-scale contractor organisations within the Sri Lankan context. It is recommended that this framework be applied to local contractor companies registered in the Construction Industry Development Authority (CIDA) as Grade C1 and above, as such companies are more likely to encounter a wide range of claims.

5. CONCLUSIONS

CM, EL, SL, and PC have been interpreted in a various manner over the years by the prior research projects. As a knowledge-intensive sector, the construction industry must adhere to appropriate KM methods in order to remain viable. Though CM process has been established as a knowledge intensive core practise by the experts in the construction industry, literature review defined the CM as a most challenging task to the construction practitioners due to lack of knowledge of the professionals who are involving into the above task. In such a context to create a wide range of expertise professionals, professionals shall adopt to the process of learning from their experience and sharing their such thoughts and experience across their respective team members. Making the best decisions is facilitated by professionals exchanging ideas and information in a collaborative setting. Accordingly, it was hypothesised that following EL and sharing project team members' PCs would enable correct judgments to be made through reusable project knowledge within the knowledge oriented collaborative culture. So developed framework offers guidance to the industry practitioners who are involving in CM, to make CM process more successful and to ensure the contractor's entitlement to claim.

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